

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

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Amendments to the Claims:

1. (Currently Amended) A method for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one reference input value (200, 210, 220) is output by the sequence controller and input to the analog linearization circuit, wherein at least one adjusting device is adjusted by means of the sequence controller, and wherein the sequence controller performs an adjustment of the analog linearization circuit by means of the adjusting devices for each pair of reference input/reference output values, until a predetermined deviation is undershot between the actual output value (500, 510, 520) of the analog linearization circuit in response to the reference input value (200, 210, 220) and the reference output values (400, 410, 420).

2. (Original) The method of claim 1, wherein at least one output signal (100, 110, 120), which corresponds to an actual input value of the linearization circuit, is acquired and/or stored by means of the sequence controller.

3. (Original) The method of claim 1, wherein at least one reference input value (200, 210, 220) is entered into the sequence controller via an input unit.

4. (Original) The method of claim 3, wherein the reference input value (200, 210, 220) is in analog form.

5. (original) The method of claim 4, wherein the reference input value (200, 210, 220) is put into the analog form by means of a D/A converter.

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

6. (Currently Amended) The A method of claim 4, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one reference input value (200, 210, 220) is entered into the sequence controller via an input unit,

wherein the reference input value (200, 210, 220) is in analog form, and

wherein the reference input value (200, 210, 220) is put into the analog form by at least one adjustable source of signals.

7. (Original) The method of claim 6, wherein the source of signals is formed by at least one reference voltage and/or at least one digitally activatable potentiometer.

8. (Original) The method of claim 7, wherein the potentiometer is preferably adjusted in equidistant steps by means of the sequence controller.

9. (Original) The method of claim 7, wherein the reference input value (200, 210, 220) is adjusted by means of at least three digitally activatable potentiometers.

10. (Original) The method of claim 7, wherein the output signals of the potentiometers are added by means of a summator.

11. (Original) The method of claim 7, wherein the settings of the potentiometers are stored, in combination with the associated reference input value (200, 210, 220) and/or a reference output value (400, 410, 420).

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

12. (Original) The method of claim 3, wherein the actual input values (110, 110, 120) and/or the reference input values (200, 210, 220) are applied to a comparator.

13. (Original) The method of claim 12, wherein the reference input values (200, 210, 220) are compared with the actual input values (100, 110, 120) by means of the comparator.

14. (Currently Amended) The A method of claim 3, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one reference input value (200, 210, 220) is entered into the sequence controller via an input unit, and

wherein the sequence controller adjusts the reference input values (200, 210, 220) by iteration, until a predetermined deviation is undershot between the actual input value (110, 110, 120) and the reference input value (200, 210, 220).

15. (Original) The method of claim 3, wherein the reference input values (200, 210, 220) are selected as starting point (200), and/or midpoint (210), and/or end point (220) of the linearized curve.

16. (Original) The method of claim 3, wherein the reference input values (200, 210, 220) are selected from a subrange of input signals of the nonlinear curve.

17. (Original) The method of claim 3, wherein the reference input values (200, 210, 220) produced by the sequence controller are applied to the input of the linearization circuit via a switch.

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

18. (Original) The method of claim 2, wherein at least one reference output value (400, 410, 420) associated with an actual input value (100, 110, 120) is acquired and/or stored by means of the sequence controller.

19. (Original) The method of claim 18, wherein the at least one reference output value (400, 410, 420) is adjusted by means of reference sources.

20. (Original) The method of claim 3, wherein the reference input values (200, 210, 220) are put into analog form by means of the D/A converter.

21. (Currently Amended) The A method of claim 2, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one output signal (100, 110, 120), which corresponds to an actual input value of the linearization circuit, is acquired and/or stored by means of the sequence controller,
and

wherein at least one reference output value (400, 410, 420) associated with an actual input value (100, 110, 120) is entered into the sequence controller via an input unit.

22. (Original) The method of claim 21, wherein actual output values (500, 510, 520) as supplied by the linearization circuit in response to the reference input values (200, 210, 220) are compared with the reference output values (400, 410, 420) by means of a comparator.

23. (Original) The method of claim 22, wherein the output signal (600, 610, 620) of the comparator is evaluated by the sequence controller.

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

24. (Cancelled)

25. (Currently Amended) The A method of claim 24, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one output signal (100, 110, 120), which corresponds to an actual input value of the linearization circuit, is acquired and/or stored by means of the sequence controller,

wherein at least one reference output value (400, 410, 420) associated with an actual input value (100, 110, 120) is entered into the sequence controller via an input unit,

wherein actual output values (500, 510, 520) as supplied by the linearization circuit in response to the reference input values (200, 210, 220) are compared with the reference output values (400, 410, 420) by means of a comparator,

wherein the output signal (600, 610, 620) of the comparator is evaluated by the sequence controller,

wherein at least one adjusting device is adjusted by means of the sequence controller, and

wherein at least one adjusting device is used for adjusting the zero point, and/or the linearity, and/or the slope of the linearized curve.

26. (Original) The method of claim 25, wherein the sequence controller activates the adjusting devices with digital pulses.

27. (Cancelled)

28. (Original) The method of claim 25, wherein the adjusting device for adjusting the zero point of the linearized curve is adjusted such that the actual output value (500, 510, 520) is essentially equal to the reference output value (400, 410, 420).

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

29. (Currently Amended) The A method of claim 24, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one output signal (100, 110, 120), which corresponds to an actual input value of the linearization circuit, is acquired and/or stored by means of the sequence controller,

wherein at least one reference output value (400, 410, 420) associated with an actual input value (100, 110, 120) is entered into the sequence controller via an input unit,

wherein actual output values (500, 510, 520) as supplied by the linearization circuit in response to the reference input values (200, 210, 220) are compared with the reference output values (400, 410, 420) by means of a comparator,

wherein the output signal (600, 610, 620) of the comparator is evaluated by the sequence controller,

wherein at least one adjusting device is adjusted by means of the sequence controller, and

wherein a further reference input value (210) produced by the sequence controller is applied to the linearization circuit.

30. (Original) The method of claim 29, wherein the associated reference output value (410) produced by the sequence controller is applied to the comparator.

31. (Original) The method of claim 29, wherein the actual output value (510) of the linearization circuit of the further pair of reference input/reference output values (210, 410) is applied to the comparator.

32. (Original) The method of claim 31, wherein the output signal (610) of the comparator is evaluated by the sequence controller.

Appl. No.: 10/682,500

Amdt. dated 03/21/2006

Reply to Official Action of December 21, 2005

33. (Original) The method of claim 31, wherein an adjusting device for adjusting the slope of the linearized curve is adjusted in such a manner that the actual output value (510) is essentially equal to the reference output value (410).

34. (Currently Amended) The A method of claim 24, for linearizing a nonlinear curve with an analog linearization circuit with digitally adjustable parameters which are output by a sequence controller, wherein the curve represents the relationship between input signals and output signals of a sensor, and wherein an output signal (100, 110, 120) is respectively associated to each input signal, and comprising the step of adjusting the analog linearization circuit in an essentially automated way by means of the sequence controller,

wherein at least one output signal (100, 110, 120), which corresponds to an actual input value of the linearization circuit, is acquired and/or stored by means of the sequence controller,

wherein at least one reference output value (400, 410, 420) associated with an actual input value (100, 110, 120) is entered into the sequence controller via an input unit,

wherein actual output values (500, 510, 520) as supplied by the linearization circuit in response to the reference input values (200, 210, 220) are compared with the reference output values (400, 410, 420) by means of a comparator,

wherein the output signal (600, 610, 620) of the comparator is evaluated by the sequence controller,

wherein at least one adjusting device is adjusted by means of the sequence controller, and

wherein a further reference input value (220) produced by the sequence controller is applied to the linearization circuit.

35. (Original) The method of claim 34, wherein the associated reference output value (420) produced by the sequence controller is applied to the comparator.

36. (Original) The method of claim 35, wherein the actual output value (520) of the further pair of reference input/reference output values (220, 420) is applied to the comparator.

Appl. No.: 10/682,500
Amdt. dated 03/21/2006
Reply to Official Action of December 21, 2005

37. (Original) The method of claim 36, wherein the output signal (620) of the comparator is evaluated by the sequence controller.

38. (Original) The method of claim 36, wherein an adjusting device for adjusting the linearity of the curve is adjusted such that the actual output value (520) is essentially equal to the reference output value (420).

39. (Currently Amended) The method of claim 241, wherein the adjustment of the adjusting devices is repeated for the paired reference input/reference output values, until a predetermined deviation between the actual output value (500, 510, 520) and the reference output value (400, 410, 420) is undershot for all reference output values (400, 410, 420).

40. (Original) The method of claim 1, wherein different linearized curves are stored in the sequence controller.

41. (Original) The method of claim 1, wherein after linearizing the curve, the output signal (100, 110, 120) of the sensor is applied as an input value to the linearization circuit by means of a switch.

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